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**Category:** Canine, Feline

## **Anemia**

*Anemia, low red blood cell count*

### **Affected Animals:**

All animals. Kittens and puppies are at increased risk of blood loss anemia from severe parasitic infestations.

### **Overview:**

Anemia, the condition of having lower than normal numbers of red blood cells called erythrocytes, can have many clinical manifestations. Affected animals often suffer from decreased energy levels, pale or yellowed gums, an increased heart rate, and an intolerance to exercise. Anemia itself is not a primary disease, but the result of an underlying disease process.

The function of red blood cells is to carry oxygen to all the cells of the body. Erythrocytes are crucial to all animals, and a severe decrease in their number causes the body cells to go through the trauma of oxygen deprivation. Owners of an anemic animal may notice that their companion's gums are pale or white in color instead of the normal pink or red.

Because the heart must work harder to provide oxygen to the starving body cells, dogs and cats with anemia have an increased heart rate. Having deprived the body cells of oxygen, anemia makes animals feel very tired and sick, and they will often show signs of depression.

Puppies and kittens can become anemic from blood-sucking pests such as fleas and intestinal parasites. The disease also is caused by blood loss from trauma, feline leukemia virus, feline immunodeficiency virus, and cancer. Treatment involves correcting the underlying disease or problem, and giving a blood transfusion if needed.

### **Clinical Signs:**

Pale or icteric mucous membranes; lethargy; depression; weakness; anorexia; heart murmur; tachypnea; tachycardia.

### **Symptoms:**

Pale gums or mucous membranes are seen when the lip is pushed up, and the eyes and ears may be pale as well. Anemic animals often become weak, depressed, sleep more than normal, stop grooming themselves, have a decreased appetite, and have increased breathing and heart rates.

### **Description:**

An animal becomes anemic when it has an insufficient number of red blood cells carrying oxygen to its body. Without oxygen, the cells of the body become damaged and may die. The hearts of anemic animals beat faster, pumping the blood at an increased rate, in an attempt to direct more oxygen to the cells. Because animals with anemia have fewer red blood cells, their blood is thinner. As a result, anemic animals can develop heart murmurs; the noise a

heart murmur makes comes from the turbulent sound thinner blood makes as it flows through the heart.

The clinical signs of the disease depend on the severity of the anemia and how quickly the anemia occurred. Those animals that become anemic gradually have a much greater chance of recovery than animals whose anemia is more sudden. With gradual anemia, the body has the time to adjust to the decreased red blood cell count; animals that become anemic very quickly, however, may die because their bodies cannot handle the sudden loss in red blood cells and oxygen.

The many possible causes of anemia can be divided into three categories. Blood loss anemia is caused by the leaking of blood out of the vascular system. Hemolytic anemia is the result of the destruction of red blood cells circulating within the blood stream.

Nonregenerative anemia refers to a decrease in erythrocyte production.

### **Diagnosis:**

The examining veterinarian will perform a blood test to determine the number of erythrocytes present in the animal's bloodstream. An in-hospital test called a "packed cell volume," or PCV, will approximate closely the percentage of red blood cells present. However, the veterinarian will typically opt to perform a complete blood count or CBC, which not only provides a more exact count of the red blood cells, but also measures the white blood cells and the platelets.

A CBC will tell the veterinarian whether the anemia is regenerative or nonregenerative. A regenerative anemia is one in which the bone marrow has released new red blood cells into the circulation in an attempt to replace the ones that were missing. If the initial CBC results suggest a nonregenerative anemia, it is possible either that the bone marrow has not had adequate time to react to the anemia or that the bone marrow is not able to produce the new red blood cells for some other reason. CBCs are usually run periodically until the patient's red blood count is stable and has returned to normal. If an animal has a true nonregenerative anemia, it will be necessary to determine the cause by means of further diagnostics. These may include fecal examination for blood parasites, urinalysis, serum chemistry, or bone marrow aspiration and evaluation.

### **Prognosis:**

Animals who get immediate medical attention have the best chance of surviving. The more severe the disease, of course, the more severe the anemia. After making a diagnosis of the underlying cause of the anemia, the veterinarian should be able to estimate the animal's likelihood of recovery.

### **Transmission or Cause:**

Animals get anemia for many different reasons. The most common ones are drug or toxin reaction, disease, and blood loss. Many common household products pose a serious toxic threat; acetaminophen, the active ingredient in Tylenol, is among the deadliest. Onions, whether cooked, raw, or dehydrated, are also especially dangerous. Other anemia-inducing substances include anti-inflammatory medications like aspirin, zinc, and propylene glycol, which is sometimes found in canned food.

Certain infectious diseases that animals contract are immune-mediated -- that is, the body begins killing its own red blood cells, resulting in hemolytic anemia. These diseases are more common among dogs. Other infectious diseases that can lead to anemia include the feline leukemia virus, feline immunodeficiency virus and blood parasites such as *Haemobartonella* and *Babesia*. Cancer and kidney failure, as well, can make a cat or dog anemic.

Blood loss, of course, means fewer red blood cells, so animals that have lost blood through trauma often become anemic. Fleas are literally bloodsuckers and are especially threatening

to kittens and puppies, which are smaller and have less blood than adult animals.

**Treatment:**

Treatment varies according to the underlying cause of the anemia. With severe anemia, a blood transfusion is needed to replace the lost blood. In order to treat the underlying disease that is causing the anemia, intravenous fluids and certain medications may also be necessary.

**Prevention:**

Some diseases that cause anemia are preventable. Newly introduced products that repel or kill fleas and ticks are both easy to apply and very effective. Diseases like the feline leukemia virus are preventable through limiting a cat's contact with other cats or by vaccination; cats at high risk for this virus, such as outdoor cats, should be vaccinated. Cats and dogs should not be given any drugs unless instructed to do so by a veterinarian; Tylenol, especially, can be fatal.